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DESCRIPTION

ANGULAR VELOCITY SENSOR AND METHOD FOR DESIGNING THE SAME

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TECHNICAL FIELD

The present invention relates to an angular velocity sensor having a tuning fork vibrator, and a method for designing the sensor.

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BACKGROUND OF THE INVENTION

In recent years, angular velocity sensors have been used in automobiles. The angular velocity sensors particularly for this purpose have been required to be small and stable against sudden external vibrations, "disturbance" so as to have high reliability.

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A conventional angular velocity sensor disclosed in U.S. Patent No.5438231 includes a tuning fork vibrator having a pair of vibrating arms coupled with each other at their lower ends with a coupling portion, drive electrodes formed on the vibrating arms to drive the arms in vibration directions and detection electrodes to detect the bending of the vibrating arms

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when an angular velocity is applied to the arms. The vibrating arms are designed to have a small driving resistance so as to decrease power consumption.

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The vibrating arms designed only for the small driving resistance may cause unnecessary vibrations when receiving vibrations as disturbance at their natural vibration frequencies different from a fundamental vibration frequency